

Upper Sand Creek Basin Contra Costa County Flood Control and Water Conservation District Work Plan

The primary purpose of the Upper Sand Creek Basin (USCB, basin) is to prevent flooding along Sand Creek downstream of the basin, and the lower reach of Marsh Creek between Sand Creek and the Marsh Creek outfall into the Sacramento-San Joaquin River at Big Break in Oakley. The regional goal for USCB is to significantly reduce the peak flow contribution from the upper Sand Creek watershed into Marsh Creek from 2870 to 134 cubic feet per second (cfs) for a 100-year storm event.

Sand Creek is the largest tributary in the lower Marsh Creek Watershed as it contributes approximately 15 square miles of drainage to Marsh Creek. Analyses of the Sand Creek drainage area indicate that 900-acre feet of flood storage capacity is ultimately required at the USCB site. Local stormwater runoff and stormwater generated in the watershed will be conveyed by Sand Creek to the basin where it will be stored and released slowly through the basin outlet, reducing peak flows downstream and reducing the potential for flooding downstream properties. Secondary purposes of the Basin include habitat restoration and water quality enhancements. USCB is part of a master plan for flood protection in the greater Marsh Creek watershed (as adopted by the Contra Costa County Board of Supervisors).

The construction of USCB will expand an existing interim flood control basin from 41-acres in area to a final constructed area of approximately 62 acres, increasing its flood storage capacity of the basin from 123 acre-feet to 900-acre feet with a 35-foot maximum depth. The expansion will be constructed by excavating the existing interim basin floor to create a deeper basin where water will be held and slowly released downstream during major storm events. Excavation depths will range from 0 to approximately 37 feet below existing grade. Soil removed from the excavation will be used to construct an earthen dam on the northeast side of the basin to impound flood waters from major storm events. Any remaining soil will be hauled off-site, stockpiled in the basin, or placed on adjacent parcel(s) for future use by interested parties.

The basin expansion will include the Sand Creek channel, creating an "on-line" basin behind the dam. Approximately 3,876 feet of Sand Creek will be excavated 10 feet below its current elevation and approximately 3,612 feet will be reconstructed with a fluvial geomorphic (natural creek) design to restore and enhance Sand Creek within the basin. The remaining 264 feet will be re-created on-site as wetland acreage. The basin will have a continuous perimeter service road as well as ramps to the basin bottom and drainage structures for maintenance access.

The basin will be a normally dry reservoir (except for low-flows) that will attenuate peak runoff by containing stormwater flows up to the 100-year storm event. During typical rains, the creek and local stormwater runoff flows will be carried in a low-flow channel and will discharge through the primary outlet pipe under the dam. This primary outlet will release a maximum peak flow of 134 cfs into the creek below the dam. This reduction will help reduce the overall flow from Sand Creek into Marsh Creek to 400 cfs. Creek flows that exceed the inlet-controlled discharge capacity of the outlet works from more severe storms would pond in the basin and the basin stage will rise. After the peak of the storm has passed, and once the creek flow becomes smaller than the outlet discharge, the water stored in the basin would be passively

released back into Sand Creek. For storms greater than the 100-year storm event, flood flows will pass over the emergency spillway and follow a controlled route to enter the creek downstream of the basin.

USCB will be the first of two basins on Sand Creek. Lower Sand Creek Basin, which will be built downstream in the City of Brentwood, will be built after USCB has been completed. The USCB project also includes trash capture for a major storm drain entering the basin from developed areas. This will improve water quality by capturing trash before it enters Sand Creek.